Proposal Background

The Community Energy and Emissions Plan (CEEP) will present a comprehensive long term framework to achieve breakthrough reductions in the use of energy and to reduce greenhouse gas emissions within the City of Campbell river. The CEEP is to be prepared as part of, and fully integrated into the City of Campbell River's Sustainable Official Community Plan (SOCP) and will be integrated into all other municipal planning and infrastructure strategies (e.g. local area and neighbourhood plans, infrastructure plans, economic development strategies).

The CEEP should have at least a 25-year time horizon, with a clear set of priorities for the first five to ten years that will set the implementation off in an irreversible direction. It will be a living document that can be updated as strategies are implemented and new opportunities arise.

The CEEP will be a high level framework with sufficient precision to clearly establish energy and emissions-related priorities for the community and define overall goals and direction against a solid baseline. It will not be an investment-grade detailed energy master plan; however it should provide an evaluation of recommendations.

The CEEP should build on any efforts and decisions already made by the City and should become the primary or overarching document for the community's energy and emissions planning. The overall objective of this plan is to establish the City of Campbell River as a model community in the areas of energy supply reliability and sustainability, and climate responsibility.

The CEEP should recognize the following initiatives that have been adopted by the City of Campbell River:

- Hiring a sustainability manager (August 2009) whose scope includes identifying and integrating sustainability practices and programs into all municipal operations and community-wide initiatives.
- Signed on to the BC Climate Action Charter committing to carbon neutrality with respect to our operations by 2012.
- The City has developed a Corporate Green Team to integrate sustainability planning objectives within all municipal operations.
- Energy: Exploring alternative energy for several City facilities including the initiation of a tidal power feasibility study for the City's Discovery Pier. Working with BC Hydro's Energy Management Assessment Program. We are currently in the process of identifying and finding funding sources for City-wide energy efficiency upgrades to civic buildings.
- Transportation: built alternative transportation modes in the form of bicycle lands and trails and pedestrian trails including the sea-walk trail.
- City Operations: We have completed a Green Fleet Review with project partner Fraser Basin Council, moving to right size the City's fleet, exploring hybrid and zero emission vehicles, implemented an anti-idling policy for the civic fleet and are moving to Bio-diesel for the civic fleet.

- Planning: The City has completed the development of two smart growth plans which will be used to inform the development of the SOCP.
- CEEI Inventory and Corporate Inventory completed in 2007

These recommendations and decisions will be taken into account in the development of the CEEP, though the planning team should feel free to make alternative or extended recommendations in any of these areas.

Scope of Work

The key deliverable will be the Community Energy and Emissions Plan following the outline specified in these Terms of Reference. The CEEP will spell out how the City plans to develop its land use patterns, energy infrastructure and utility systems into the future. The following items should be accomplished as part of the CEEP:

- Identify the current energy and emissions profile (using Community Energy and Emissions Inventory or other method)
- Forecast energy and emissions trends with current consumption rates and projected population growth/land-use pattern developments
- Document the planned growth in the community
- Map current and future energy density
- Identify and map local energy sources
- Identify and map energy infrastructure and future needs
- Identify energy demand and emissions reduction opportunities in existing and new growth
- Develop strategies and policies to reduce energy use in new and existing buildings, including policies and strategies to encourage connection to district energy systems
- Estimate energy use reduction and identify reduction of electrical energy use resulting from implementation of new strategies and policies in providing energy service
- Identify opportunities for district energy systems
- Identify renewable energy strategies for areas that do not have district energy potential
- Identify opportunities for local electricity generation, either stand-alone or combined with district energy systems
- Develop land use strategies to support vision and goals
- Develop sustainable transportation strategies
- Identify strategies to increase energy efficiency program participation in the community (in the industrial, commercial business and residential sectors)

The recommended integrated energy planning approach will encompass the entire energy value chain; the following elements will be assessed within the scope of the study:

Primary fuels and other commodities:

- Fossil fuels used for the generation of electricity and/or heat whether consumed within the Municipality/Regional District or at remote locations

- Renewable fuels used for the generation of electricity and heat including hydro, solar, wind, biomass and municipal waste

- Geoexchange used for heating or cooling

- Recovered heat from industrial and other processes redistributed for secondary uses
- Fossil fuels for transportation including gasoline (petrol) and mineral diesel
- Renewable fuels used for transport including bioethanol and biodiesel
- Electricity used for transport
- Potable water, grey and black-water, non-potable water, and waste water

Energy Distribution

- Electricity via existing public grids
- Natural gas via existing public grids
- District energy (heating or cooling) via networks with ownership structures still to be determined
- Private networks with various ownership forms
- Sewage and storm water systems

Energy Consumption

- Heating, cooling, lighting and plug loads in residential buildings
- Heating, cooling, lighting and plug loads in commercial/institutional buildings
- Energy use for communal applications such as street lighting
- Energy use of various forms for industrial users
- Energy use for individual transportation
- Energy use for mass transit
- Water / waste water use by major applications

Proposed Plan Outline and Contents
The CEEP will cover each of the elements outlined below.

A. Vision, Goals, and Targets

This section will define the vision and aspirations of the Municipality/Regional District as a sustainable community.

The vision will include goals for the entire community, stated and graphically presented in a way that is simple to understand, easily communicated, but specific enough to ensure progress can be tracked over at least 25 years, and will cover:

a. Energy and water use relative to current global and local levels in homes, buildings, industry and transportation

b. Greenhouse gas creation relative to current global, national and local levels

c. Social benefits in terms of equity, affordability and reliability of energy services (at an overview level)

d. Economic and financial benefits, including potential revenue and job creation from energy production/supply and/or sale of carbon offsets, and reduced costs associated with reduced demand and use for energy and production of emissions

The guiding principles most likely to be applied in establishing the vision and the goals may include the following:

a. Maximize end-use energy efficiency in buildings, transportation and industry

b. Maximize the use of cogeneration, heat recovery and use of renewable energy sources

c. Minimize the amount of primary fossil fuel that will be needed to deliver competitive energy services to the Municipality/Regional District, including energy used in homes, buildings, transportation and industry.

d. Be sufficiently flexible to grow with the anticipated development of the Municipality/Regional District

e. Minimize the greenhouse gases (related to energy use) created by the community, irrespective of the location of the source of the greenhouse gas, such that over time, the Municipality/Regional District meets and exceeds the long term provincial targets.

f. Minimize the risk of energy service interruption or poor service quality.

g. Be sufficiently flexible to incorporate new operating strategies, policy tools, business models, fuels and technologies as they emerge.

This section should also set energy and GHG targets for the local government. Target-setting should reference energy and emissions baseline data (for example, from the relevant Community Energy and Emissions Inventory) as well as business as usual trends. These targets should be based on 5, 15, and 25 year time horizons.

The vision and associated goals and targets can be benchmarked against global best practices using cities and large scale developments from Europe, Asia and North America.

B. Community Context

This section will provide an overview description of the community including:

- Local concerns and issues
- Growth rate and commentary

- Demographics

- Current land use characteristics, e.g. areas of high density, geographic characteristics and constraints, agricultural land, industrial parks, brownfield or greenfield development opportunities, etc.

The CEEP will include baseline energy and emissions data, referencing the Community Energy and Emissions Inventory and other relevant data or documents. It will also include an assessment of the business as usual trends for energy use and associated greenhouse gas creation of the existing residential, commercial and institutional, and industrial base. On a sample basis, specific energy and greenhouse indices will be developed, which will serve as indicative performance indices for conservation strategies. This baseline will include the present day energy policies and regulations.

The following subject areas should be illustrated spatially (i.e. mapped) as well as described in written format, where appropriate:

i. Energy Demand

1) Existing energy demand by area and land use type, including energy nodes

2) Future energy demand trends under a business as usual scenario

3) Conservation opportunities to reduce long term energy demand (including land use intensification, green building, transportation, and energy cascading opportunities)

ii. Energy Supply

1. Existing energy supply sources

2. Potential new alternative energy sources and fuels (e.g., waste heat recovery, biomass, microhydro, biofuels, etc.). A high level scoping of potential cost/benefit analysis of recommended energy sources should be performed, with potential identification of projects that are most suitable for the City to pursue.

iii. Opportunity Assessment for Integrated Community Energy Systems, e.g. Integrating future development and existing neighbourhoods, by matching nodes of density/energy demand with potential sites for district energy plants, potential sources of waste energy, and local sources of fuel

iv. Infrastructure requirements (including transportation and utility infrastructure)

1. Existing

2. Future under growth projections and development scenarios

C. Stakeholder and Public Engagement

The CEEP should outline a stakeholder and public engagement strategy that will be executed as part of the plan development process. The strategy should include at least 3 engagement workshops with key stakeholders and a broad public engagement process. Holding community

workshops will help to answer questions, alleviate early apprehensions, and have the added benefit of the community's involvement in the process moving forward.

It may be that supplemental community and outreach meetings are needed to gain the appropriate consensus, understanding and commitment from different community groups, provincial or utility stakeholders and even potential investors. The CEEP proposal should be sufficiently flexible to accommodate additional meetings as appropriate.

The CEEP should also include a Stakeholder/Public Engagement Strategy for go-forward plan implementation. The elements of the strategy can include:

- How to incorporate partners, such as electric and gas utilities and environmental NGOs, in engaging community members on topics such as climate change, energy efficiency in existing and new buildings and alternative energy

- How to promote existing funding offers to community members, such as BC Hydro Power Smart programs (a list of available BC Hydro programs can be provided by BC Hydro), natural gas utility demand-side management programs or the Provincial Government energy efficiency and alternative energy funding programs

The final CEEP will include the results of stakeholder engagement and public outreach campaigns as an appendix to the plan.

D. Community Energy and Emissions Strategies and Recommendations

The CEEP will define both demand-side (conservation) and supply-side energy and emissions strategies for the Municipality/Regional District, including:

A. Economically viable energy efficiency measures as the preferred energy source.
B. District energy networks delivering heating and cooling services. These may be community-wide, or constrained to sub developments (Scale Projects) with future networking possibilities.*
C. Distributed combined heat and power (CHP) technology opportunities.
D. Integrated resource recovery strategies, which look at making municipal infrastructure, and the communities served by the infrastructure, more economically, environmentally, and socially sustainable by extracting value from the resources in waste
E. Long term infrastructure plan required to support the district energy and CHP opportunities identified above.
F. Sustainable transportation strategies which seek to limit emissions and waste, use renewable resources at or below their rates of generation, and use non-renewable resources at or below the rates of development of renewable substitutes, while minimizing the impact on the use of land and the generation of noise.
G. Use of renewable/alternative energy sources including wind, geothermal, biomass and biogas, passive solar and active solar.
H. Use of waste heat energy sources (industrial, institutional, sewage lines and treatment plants, other)
I. Possible business and operating models for efficient energy supply and efficiency services including an assessment of the regulatory, code and institutional guidelines.

J. Monitoring, auditing and potential monetizing of greenhouse gases.
K. Possible extensions of the CEEP to neighbouring communities and exploration of possible partnership opportunities with the Strathcona Regional District.
L. Economic development arising from the systematic implementation of an integrated community approach to energy
M. Incorporation of a corporate strategy to maximize end-use energy efficiency in municipally owned or operated buildings, fleet and municipal operations;
N. Policies that support and encourage energy conservation, district energy systems and use of alternative energy, including

a. Voluntary and Moral Suasion Policies, such as:

i. Promotion of the preferred integrated energy solution

ii. Community engagement

b. Distributive Policies, such as:

i. Energy service provision by the Municipality/Regional District (e.g. Municipal energy utilities (providing heat and/or electricity), provision of energy audits, installation, operation and maintenance of energy efficiency measures, etc.)

ii. Education and training

iii. Tax or Fee Subsidies

iv. Incentives

v. Grants

b. Redistributive policies

i. New or increased taxes

ii. Levies

d. Regulatory policies

i. Energy standards (e.g. requirements for renewables, DPA requirements, energy standards for municipal buildings and purchased equipment, etc.)

ii. Zoning

iii. Sustainability checklist (or other supporting regulatory policies, such as mandatory information disclose, mandatory professional qualifications, etc)
iv. Mandatory use of municipal service (e.g. mandatory connection to district heating)

* One of the key deliverables of this strategy will be a roadmap for the roll-out and phasing of "scale projects" to implement district energy systems in the most suitable neighbourhoods and

locations. These scale projects could eventually be linked together and form nodes on an integrated community-wide energy system.

- The CEEP will make recommendations about which of these opportunities or strategies should be pursued by the Municipality/Regional Government. The strategy plan should include a high level cost-benefit analysis of specific recommendations and potential opportunities for reduction of overall energy use, electricity use and GHG emissions.

E. Implementation Strategy

The CEEP will define how the recommended strategies should be implemented, with the identification of achievable milestones. The implementation plan should be strategic and action-oriented, including the following elements:

a. Actions (Policies, Scale Projects, etc.)

b. Resources required

c. Roles and Responsibilities

d. Schedule

"Scale projects" are distinct areas of the Municipality/Regional District where the size and timing of planned development are such that "new rules" in line with the CEEP could be applied within large, but contained, boundaries. They are of a scale that is large enough to address the issues of both the energy and water supply and demand. Each would be developed in such a way that, over time, multiple Scale Projects would
ultimately blend into an overall community context and, by "connecting the dots", create community-wide outcomes.

An ongoing structure will be needed within the community to manage the refinement and long term implementation of the CEEP's recommendations. The CEEP will include suggestions on the nature of this Implementation Committee.

The CEEP will also include a comprehensive inventory of the various organizations and individuals whose engagement or expertise will accelerate the successful deployment of the CEEP. This exercise will also recognize existing projects or initiatives that are relevant to potentially support the CEEP.

CEEP Team Structure and Expertise

The CEEP Steering Committee could include the following key functions, where applicable:

- Municipal Land-use and Development Planning
- Municipal Engineering
- Community Economic Development
- Municipal Political Leadership (Mayor or Councilperson)

- Community Transportation Planning
- Community Environmental Planning
- Electric and Gas Utilities

The CEEP Team will also need to bring additional consulting expertise including:

- Proven CEEP development expertise
- Broad technical and operational knowledge of conventional and alternative energy generation technologies
- Municipal planning and engineering
- Transportation planning
- In-depth experience of cost-effective high-efficiency construction and renovation
- Knowledge of greenhouse gas monitoring, accounting, trading and monetization
- Specific expertise in community-scale district heating and/or energy systems
- Regulatory, institutional and business frameworks for integrated energy services
- Detailed economic and investment analysis associated with municipal energy systems and large scale construction projects
- Stakeholder and public engagement.

Timeline

The CEEP, including associated outreach meetings, should be completed in an expected time range of 120 to 180 days.

Deliverables

1. DRAFT Report
2. Final Report